

# Long-Term Success of Televised Business Ideas: Evidence from Finnish Dragons' Den

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## Abstract

This study investigates the determinants of long-term (up to ten years) venture success in the Dragons' Den context using regression analysis on a sample of 46 Finnish firms. The results indicate that success is multidimensional and nonlinear. Business idea readiness emerges as the most robust predictor across models followed by the contribution of female team members and the requested investment amount. The logarithmic-linear specification outperforms the linear model, suggesting that nonlinear transformations improve explanatory power. Negative second-order communalities indicate overlapping explanatory mechanisms. Overall, the findings emphasize the importance of venture readiness, investment amount, and team gender structure supporting the use of nonlinear and interaction-based approaches in entrepreneurship research.

## Keywords

Televised Pitch, Dragons' Den, Finnish Firms, Long-Term Success, Regression Analysis

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## 1. Introduction

Televised entrepreneurial pitching formats such as Dragons' Den provide a unique and increasingly utilized empirical setting for studying early-stage venture evaluation and success. The format has been adopted in several countries. Shark Tank is the US television series franchised of the British Dragons' Den which itself was a remake of Japanese television show The Tigers of Money. In these programs, entrepreneurs present their business ideas to a panel of investors, who make funding decisions based on limited but structured information revealed during the pitch. The format has been widely adopted across countries and offers researchers a rare opportunity to observe real-time investment decision-making, standardized

pitch structures, and, in some cases, subsequent venture outcomes.

Prior research on Dragons' Den-type contexts has primarily focused on investor decision-making processes and determinants of funding success rather than long-term venture performance. For example, [Pollack et al. \(2012\)](#) demonstrate that entrepreneurs' preparedness and cognitive legitimacy significantly increase the likelihood of receiving funding, based on a dataset of televised pitches from Shark Tank and Dragons' Den. Their findings highlight that investors rely heavily on observable signals that reduce uncertainty rather than purely objective measures of business quality. Similarly, [Jeffrey et al. \(2016\)](#) show that investors employ non-compensatory decision rules, implying that failure on key dimensions (e.g., credibility) cannot be offset by strengths in other areas. Thus, failing a key dimension means failing the whole pitch.

Many studies in this context have emphasized the role of communication and persuasion in shaping investment outcomes. For instance, [García-Gómez \(2018\)](#) demonstrates that investor-entrepreneur interactions in Dragons' Den follow systematic persuasive patterns, suggesting that linguistic and rhetorical features influence decision-making beyond the intrinsic quality of the business idea. Complementary work has also shown that linguistic framing, storytelling, and presentation quality are critical determinants of funding success ([Pollack et al., 2012](#)). [Ellison and Giannitsarou \(2013\)](#) interpret the television show as reflecting a strategic signaling game, where preparation and presentation act as costly signals.

However, despite these advances, the existing literature exhibits two important limitations. First, most studies focus on short-term outcomes, such as whether a venture receives funding during the show, rather than long-term performance. Second, prior research typically emphasizes behavioral and qualitative explanations, with relatively limited use of formal predictive modeling frameworks, particularly those grounded in regression analysis and similar statistical models. The present study addresses these gaps by examining the long-term success of business ideas presented in the Finnish version of Dragons' Den. Specifically, the objective of this study is to develop a regression-based framework in which 10-year venture success is explained using simple, observable variables derived from the televised pitches themselves. These variables may include, for example:

- characteristics of the business idea (e.g., sector, readiness, scalability indicators)
- features of the entrepreneur team (e.g., gender of participants, size of team)
- elements of the pitch (e.g., investment, offer, investor interest)

This approach differs from prior research in several important ways. First, while earlier studies have used pitch data to explain investment decisions, this study extends the analysis to ex post venture performance, thereby linking initial evaluations to long-term realized outcomes. Second, the use of regression analysis allows for the estimation of marginal effects of individual predictors, as well as the decomposition of explained variance into unique and shared contributions, thereby providing a more nuanced understanding of the determinants of success. Third,

by focusing on observable and replicable variables, the study contributes to the development of parsimonious predictive models that can be applied in both research and practice. Furthermore, the Finnish context provides an additional contribution, as most prior empirical studies have relied on data from the UK, US, or Canada. This enables generalizing the framework to a different institutional and cultural setting.

In summary, this study contributes to literature by integrating insights from entrepreneurial finance, behavioral decision theory, and regression-based modeling to analyze the relationship between observable pitch characteristics and long-term business success. By doing so, it moves beyond descriptive and short-term analyses toward a predictive and quantitatively rigorous understanding of business idea performance in Dragons' Den-type environments. The structure of the study is classified into five sections as follows. The introductory section tentatively summarizes prior research, motivation, and objectives of the study. The second section concentrates on summarizing the main studies carried out in similar environments. In the third section, the data and statistical methods are briefly discussed. The fourth section reports empirical results, while the last section summarizes the results and gives hints for future research.

## **2. Prior Studies on the Dragons' Den Concept and Research Context**

### **2.1. Relevant Prior Studies**

In this section, a short review of studies based on Dragons' Den type of format. Dragons' Den is a reality television format in which entrepreneurs pitch business ideas to a panel of wealthy investors in exchange for equity stakes. The format originated in Japan (as The Tigers of Money) and has been adapted internationally (e.g., UK, Canada, China, and Finland). From a research perspective, these programs provide naturalistic observational data on early-stage venture evaluation, recorded investor-entrepreneur interactions, and also ex post observable outcomes (e.g., funding, firm growth). There are several trends of research concentrated on the context of Dragons' Den televised program.

First, there are studies on investor decision-making in Dragons' Den from several different perspectives. Jeffrey et al. (2016) analyzed the heuristic decision making by business angels in the context of Canadian Dragons' Den. They observed interactions between entrepreneurs and investors in televised pitches and used behavioral analysis of decision processes to compare them with decision theory. The authors found that investors rely on non-compensatory decision rules (heuristics), so that poor performance on one dimension (e.g., credibility) cannot be offset by strengths elsewhere. Decisions are boundedly rational, prioritizing cognitive efficiency over full optimization, and risk and return are not linearly traded off. Their results showed that business idea success depends not only on objective quality, but also on threshold-based screening criteria and cognitive shortcuts.

Mason and Stark (2004) concentrated on early-stage evaluation criteria and interaction dynamics as observed in the Canadian version of Dragons' Den. They carried out a verbal protocol analysis of investor-entrepreneur interactions using qualitative coding of dialogue to identify evaluation stages. The authors pointed out that investor evaluation proceeds through staged filtering processes and the key criteria include entrepreneur credibility, preparedness, and market realism. Interaction dynamics reveal when a venture moves from screening to serious consideration. In summary, they showed that the success of a pitch is strongly tied to interactional signals and perceived legitimacy, not only the underlying business idea.

In the Netherlands, de Vreede (2013) analyzed in his thesis determinants of investment propensity using 207 pitches from the BBC television program "Dragons' Den". These pitches resulted in firsthand observations of real interaction between entrepreneurs and business angels. His study is based on both qualitative and quantitative analysis to test propositions. The findings showed that investment likelihood increases with innovation level of the idea, quality of the pitch, and fit with investor expertise. However, investment likelihood decreases with overly social/non-commercial orientation and unrealistic valuation. Furthermore, entrepreneur characteristics (e.g., age, experience) also matter in the likelihood. In summary, the study showed that business idea success is multidimensional, combining idea quality, presentation, and entrepreneur traits.

Second, there are studies on pitch content and communication. García-Gómez (2018) analyzed persuasion and negotiation strategies using recorded pitch and negotiation sequences in UK and Spanish versions of Dragons' Den. The author made use of discourse and interaction analysis to draw conclusions on pitch content and communication. He showed that investors systematically use structured persuasion tactics (e.g., "foot-in-the-door"), negotiations follow recurrent interactional patterns, and persuasion effectiveness is linked to linguistic and rhetorical strategies. Thus, the success of business ideas is partly mediated by communication effectiveness, not only economic fundamentals.

Ducasse (2025) analyzed language and failure in entrepreneurial pitches in her study "The language of No" based on Dragons' Den and Spanish equivalent Tu Oportunidad. She used data from corpus of unsuccessful pitches (English and Spanish) and applied genre and content analysis to draw conclusions. Her findings showed that failed pitches share systematic structural deficiencies, for example missing key "moves" (e.g., value proposition clarity) and the pitch suffers from lack of investor-relevant information. Thus, investors' rejection is linked to identifiable discursive "deal-breakers". Ducasse draws the conclusion that failure is predictable from linguistic and structural weaknesses in the pitch.

Zhang et al. (2025) analyzed cross-cultural differences in pitching strategies in the context of UK *Dragons' Den* and Chinese equivalent. The authors used data from 160 pitches and applied corpus-based linguistic analysis to draw conclusions. Their findings showed that entrepreneurs systematically use positive eval-

uative language to align investors and that cultural differences exist in emotional appeal and intensity of claims. Successful pitches emphasized value framing and investor alignment. Thus, the main conclusion was that business idea success is partly culturally contingent and influenced by communication norms.

Third, there are descriptive statistics and scientific studies concentrating on outcomes and business success of the participating pitches after the show. [Blaseg and Hornuf \(2024\)](#) carried out a large empirical analysis of pitches in a multi-country dataset (UK, Canada, US, Germany versions) based on 657 episodes and 3.260 pitches. The idea of the study was to make a longitudinal tracking of ventures up to 2 years post-show using econometric analysis of venture performance. The key findings of their study were that ventures backed by well-known investors perform better and that effect is stronger when investor expertise matches the venture. Moreover, investor reputation acts as a signal to external stakeholders. Thus, their study emphasized that success is not only about the idea, but also about who invests and the signaling value of that investment.

In summary, research on Dragons' Den-type programs demonstrates that they provide a unique empirical setting for studying entrepreneurial finance, decision-making, and communication under uncertainty. While the programs simulate real venture capital processes, they also introduce media-driven distortions. Consequently, success in such context reflects a complex interplay between economic fundamentals, cognitive heuristics, and performative communication. Thus, success is multi-dimensional and depends on intrinsic quality (innovation, scalability), entrepreneur characteristics, and presentation and communication. Investor decisions are heuristic and bounded based on threshold rules and pattern recognition rather than fully rational optimization. Communication is critical. Pitch success is strongly influenced by rhetorical structure, clarity of value proposition, and alignment with investor expectations. However, media exposure matters and even unsuccessful pitches may benefit from increased visibility and signaling legitimacy. Financial outcomes are mixed, and not all funded ventures succeed, and some rejected ventures may become highly successful.

## 2.2. Special Characteristics of the Study

In contrast to a substantial body of prior research on Dragons' Den-type programs, this study does not focus on the immediate success of pitches as reflected in investor behavior or the acquisition of funding during the televised broadcast. Existing studies have predominantly examined short-term outcomes, such as investment decisions, and have emphasized the role of signaling, preparedness, and interaction dynamics in shaping these outcomes ([Pollack et al., 2012](#); [Jeffrey et al., 2016](#); [García-Gómez, 2018](#)). While such approaches provide valuable insights into investor decision making, they offer only a limited perspective on the ultimate viability and performance of the underlying business ideas.

The distinctive contribution of the present study lies in its focus on the long-term survival and success of ventures presented in the Finnish version of Dragons'

Den. Specifically, the study develops a statistical modeling framework to explain venture outcomes over an extended time horizon. The survival and success of the pitched ventures are evaluated over a ten-year period (2014-2024), enabling a more comprehensive assessment of how the business ideas ultimately performed after the conclusion of the program. The extended observation window provides a robust basis for assessing post-show venture performance, thereby addressing a key limitation in prior research, which has largely relied on short-term or contemporaneous indicators. By shifting the focus from immediate investor reactions to realized outcomes, the study contributes to a more outcome-oriented understanding of entrepreneurial success in televised pitching environments.

Venture success is operationalized using a five-point ordinal scale, capturing varying degrees of long-term performance. The explanatory variables are constructed using a combination of objective measures and easily observable subjective assessments, ensuring both replicability and practical applicability. The explanatory factors are grouped into several categories:

- Industry characteristics of the business idea
- Entrepreneurial team characteristics (participants)
- Core attributes of the business idea, including:
  - level of maturity
  - scalability
  - marketing orientation
- Financial characteristics, including:
  - requested funding (budget)
  - equity offered to investors
- Investor engagement, measured by the level of investor commitment during the pitch

When integrating these variables into a regression-based framework, the study aims to identify the key determinants of long-term venture success and to quantify their relative contributions. In doing so, it complements existing literature by moving beyond short-term investment outcomes toward a systematic and quantitatively grounded analysis of long-term business idea performance in the Dragons' Den context.

### **3. Empirical Data and Methods**

#### **3.1. Success Measure**

This study is based on observational data collected from the Finnish version of Dragons' Den (Leijonan luola), first broadcast in 2013. The format of the program follows the internationally established Dragons' Den concept, in which entrepreneurs present their business ideas or inventions to a panel of venture capital investors. The investors evaluate each proposal and, if sufficient potential is perceived, may negotiate an equity-based investment. However, agreements made during the program are non-binding and represent preliminary commitments rather than finalized investment contracts. The first season of the Finnish program

aired on 13 February 2013 and included 50 business ideas. Two observations were excluded due to their non-commercial, charitable nature, and two additional pitches were removed due to missing data. The final sample therefore consists of 46 pitches, which should be taken into account when interpreting the results, as the relatively small sample size renders the findings tentative.

The success (or survival) of the business ideas presented in the program was evaluated over a ten-year period (2014-2024), allowing for an assessment of long-term outcomes after the televised appearance. This extended observation window provides a more reliable measure of venture performance than short-term indicators typically used in prior research. Venture success was operationalized using a five-point ordinal scale (1 - 5):

1. The business entered the market but incurred losses and was discontinued
2. The business did not enter the market
3. The business entered the market but only employed the entrepreneur
4. The business entered the market and employed the entrepreneur and a small number of additional employees
5. The business achieved substantial growth and employed multiple individuals

This classification captures both market entry and growth dynamics, reflecting meaningful variation in long-term performance. The objective in constructing the scale for measuring long-term success was to ensure that the categories comprehensively capture the range of possible post-show outcomes (i.e., coverage), while remaining sufficiently coarse to allow each business idea to be unambiguously assigned to a single category. In addition, the scale was designed so that the differences between categories approximate equal intervals in terms of success. This allows the scale to approximate an interval-level measurement, thereby enabling the application of more advanced statistical methods, such as regression analysis, to explain variations in success.

### 3.2. Independent Variables

The selection of explanatory variables is grounded in prior research on entrepreneurial pitching, venture success, and investor decision-making. Variables are grouped into four categories: (1) industry characteristics, (2) team characteristics, (3) business idea attributes, and (4) investment-related variables. Given that investors in Dragons' Den represent diverse industry backgrounds, the general nature of the business idea was captured using industry dummy variables. These allow for the examination of how industry affiliation and potential fit with investor expertise influence venture success (cf. Blaseg & Hornuf, 2024). Business ideas were classified into four sectors based on a simplified aggregation of the NACE Rev. 2 classification system:

- Technology & Software (NACE J, M - partially)
- Physical Products & Industrial Innovation (NACE C, T - partially)
- Services, Consulting & Creative Industries (NACE M, R, S - partially)
- Commerce, Marketplaces & Distribution (NACE G)

This categorization represents a functional aggregation of NACE sectors commonly used in empirical research to construct analytically meaningful groups (Eurostat, 2023).

The second group of explanatory variables captures characteristics of the entrepreneurial team. Prior research has shown that team composition significantly influences venture outcomes. First, team size has been linked to improved performance due to increased human capital and resource diversity (Eisenhardt & Schoonhoven, 1990). Second, gender diversity has been associated with enhanced decision-making quality and firm performance (Hoogendoorn et al., 2013). Accordingly, team characteristics were operationalized using three variables:

- number of participants in the pitch
- number of female participants
- proportion of female team members (%)

In addition, the expertise of the team was evaluated based on their performance during the pitch. Entrepreneurial expertise is a key determinant of venture success, as it affects both execution capability and investor confidence (Ucbasaran, Westhead, & Wright, 2008). Team expertise was assessed on a five-point scale (1 = very low, 5 = very high) by two expert evaluators.

The third group of variables captures core attributes of the business idea itself. Prior research highlights that factors such as preparedness, clarity, and perceived quality strongly influence both funding decisions and venture outcomes (Pollack et al., 2012). Three key attributes were operationalized:

- Business idea maturity (readiness): capturing the developmental stage of a business idea, reflecting the extent to which the venture has progressed from a conceptual state to a commercially deployable offering. It operationalizes venture readiness as a continuum of increasing technical, organizational, and market validation, measured on a three-point scale (1 - 3).
- Marketing orientation: reflecting on how effectively the idea could be communicated and positioned, measured on a five-point scale (1 - 5)
- Scalability: capturing the potential for replication and growth, measured on a three-point scale (1 - 3)

These variables are consistent with prior research emphasizing the importance of scalability, preparedness, and market positioning in entrepreneurial success (Blank & Dorf, 2020). Importantly, these attributes were directly observable in the televised pitches and often explicitly discussed during investor questioning.

The fourth group of variables captures factors related to investment structure and investor behavior. Prior research suggests that investor involvement, deal structure, and signaling effects play a critical role in venture outcomes (Jeffrey et al., 2016; Blaseg & Hornuf, 2024). Thus, the following variables were included:

- requested investment amount (euros)
- equity offered to investors (%)
- equity acquired by investors (%)
- number of investors participating in the deal

In many cases, investments were made jointly by multiple investors, reflecting the importance of syndication and complementary expertise in early-stage ventures. Such arrangements may enhance venture performance by combining diverse knowledge and resources.

### 3.3. Statistical Method

The purpose of the empirical analysis is to develop a statistical model for predicting the long-term success of business ideas in the context of Dragons' Den-type programs. In this study, regression analysis is employed as the primary analytical method due to its simplicity. Thus, empirical analysis is based on the estimation of the regression equation, where long-term success is explained by a set of independent variables. Linear regression analysis is based on several standard assumptions: (i) a linear relationship between the dependent and independent variables, (ii) independence of the error terms, (iii) homoscedasticity (constant variance of the errors), and (iv) approximate normality of the residuals. The analysis also assumes the absence of severe multicollinearity among the independent variables and correct model specification.

Violations of these assumptions may affect the unbiasedness and consistency of coefficient estimates and render statistical inference (e.g., t-tests and p-values) unreliable. However, primary objective in this study is not to interpret individual regression coefficients but to model and explain variation in overall success of business ideas. Therefore, attention is paid to the proportion of variance explained by the model ( $R^2$ ). To further decompose the explanatory power of the model, the effects of individual predictors on  $R^2$  are analyzed using commonality analysis, which partitions explained variance into unique and shared (common) components (see Seibold & McPhee, 1979; McPhee et al., 1979).

In this analysis, model specification is guided by empirical criteria. Specifically, backward stepwise selection (backward elimination) is used to construct the final regression model. This top-down modelling approach begins with a full model including all candidate predictors and iteratively removes the least contributive variables based on a specified criterion (in this case,  $R^2$ ) until a stopping rule is reached. The method is particularly useful for reducing model complexity while retaining explanatory power.

Backward selection is generally preferred over forward selection because it is better able to detect suppression effects, where a predictor becomes important only in the presence of other variables. This property is especially relevant in the context of commonality analysis, where understanding shared and unique contributions of predictors is essential. Moreover, backward selection evaluates all variables simultaneously at the outset, providing a more comprehensive modelling context than forward selection. In this analysis, the backward selection of variables is applied on original independent variables to give a linear regression model. However, due to potential non-linearity the logarithmic-linear version of the model is also estimated and compared with the linear model.

## 4. Empirical Findings

### 4.1. Distributions of Variables

**Table 1** presents the distribution of venture success over the ten-year period following the Dragons' Den appearance. The results indicate a high overall failure rate among the pitched business ideas. A clear majority of ventures either failed to enter the market or were discontinued after market entry. Specifically, 73.9% of the ventures can be classified as unsuccessful over the observation period (categories 1 and 2). Of these, 39.1% never entered the market, while 34.8% entered the market but subsequently incurred losses and were discontinued. These findings suggest that, despite initial exposure and potential investor interest, most business ideas presented in the program did not achieve sustainable operations. A smaller proportion of ventures demonstrated limited viability.

**Table 1.** Distribution of the success measure.

Level of success during 10 years period after show	Class	Frequency	Percent
1. The business entered the market but incurred losses and was discontinued	1	16	34.80
2. The business did not enter the market	2	18	39.10
3. The business entered the market but only employed the entrepreneur	3	6	13.00
4. The business entered the market and employed the entrepreneur and a small number of additional employees	4	4	8.70
5. The business achieved substantial growth and employed multiple individuals	5	2	4.30
	Total	46	100.00

Approximately 13.0% of the businesses survived at a minimal level, employing only the entrepreneur, while 8.7% achieved modest growth, employing a small number of additional individuals. Only two ventures (4.3%) exhibited substantial success, characterized by significant growth and the employment of multiple individuals. This evidence indicates that high-growth outcomes are relatively rare among the sampled pitches. Overall, the distribution is heavily skewed toward lower success categories, highlighting the considerable uncertainty and risk associated with early-stage business ideas presented in televised pitching contexts. The results are consistent with prior research suggesting that only a small fraction of early-stage ventures achieve substantial growth, while the majority fail or remain small-scale operations.

Appendix 1 presents descriptive statistics for the variables used in the analysis. The success measure has a mean of 2.087 (median = 2), indicating that, on average, ventures performed at a relatively low level over the ten-year observation period. The positive skewness (1.038) suggests that the distribution is right-skewed, with a small number of more successful ventures but a concentration of observations in lower success categories. This is consistent with the descriptive findings

reported earlier and reflects the high failure rate typical of early-stage ventures. The industry dummy variables indicate that the largest proportion of ventures belongs to Industry 2 (Physical Products & Industrial Innovation) (mean = 0.391), followed by Industry 3 (Services and Creative Industries) (0.239), Industry 1 (Technology & Software) (0.196), and Industry 4 (Commerce and Distribution) (0.174).

The average number of participants in a pitch is 1.717, indicating that most ventures are presented by small teams or solo entrepreneurs. The median value of 1 further supports this observation. The distribution is positively skewed (1.494), implying that larger teams are relatively rare. Moreover, gender representation in pitches is limited. The average number of female participants is 0.565, and the median proportion of female team members is zero, indicating that a substantial share of teams consists entirely of men. The expertise of the team is relatively high (mean = 3.717, median = 4), with low dispersion and near-symmetric distribution (skewness = 0.121). This suggests that most teams are perceived as moderately to highly competent, potentially limiting variation in this predictor.

The maturity (readiness) of the business ideas is relatively high (mean = 2.565, median = 3), with negative skewness (-1.360), indicating that most ventures are already close to market readiness at the time of the pitch. The marketing orientation variable has a mean close to 3 (2.978), suggesting moderate levels of perceived marketability. Its distribution is approximately symmetric. The scalability of the ideas is also moderate (mean = 2.065), with a relatively flat distribution (kurtosis = -1.416), indicating variation across ventures.

The requested investment amount shows substantial variation (mean = 104,565 and standard deviation = 129,206) and is highly right-skewed (2.677) with high kurtosis (6.972). This indicates the presence of extreme values (outliers), which may influence regression estimates and should be treated with caution (e.g., via transformation or robust estimation). The equity offered averages 19.6%, with moderate dispersion, suggesting relatively consistent expectations among entrepreneurs. In contrast, the equity acquired by investors has a lower average value (9.8%) and a median of zero. This is caused by the fact that in 30 cases (65.2%) no deal was concluded. This is further supported by the number of investors participating in the deal, which has a mean of 0.674 and a median of zero.

## 4.2. Correlation Analysis

**Table 2** presents Pearson correlation coefficients between the long-term success measure and the independent variables for the sample. The correlation coefficients for industry dummies are generally small and statistically insignificant. None of the industry categories exhibit a meaningful association with long-term success (all  $p > 0.33$ ). This suggests that industry affiliation alone does not explain variation in venture outcomes within this sample. Consequently, sectoral differences appear less important than firm- or team-level characteristics in predicting long-term success. From team-related variables, the number of female partici-

pants shows a moderate positive correlation with success ( $r = 0.337$ ,  $p = 0.022$ ), which is statistically significant at the 5% level. This indicates that ventures with female participation tend to perform better in the long run.

**Table 2.** Pearson correlations between success and independent variables.

Variable	Correlation	<i>P-value</i>
Industry 1	0.0110	0.9430
Industry 2	-0.1440	0.3380
industry 3	0.0480	0.7500
Industry 4	0.1200	0.4260
Number of participants in the pitch	0.2270	0.1300
Number of female participants	0.3370	0.0220
Proportion of female team members	0.1970	0.1900
Expertise of team	0.2780	0.0610
Business idea maturity (readiness)	0.4650	0.0010
Marketing orientation of idea	0.2510	0.0920
Scalability of idea	0.1930	0.1980
Requested investment amount	-0.3240	0.0280
Share of equity offered to investors	-0.1860	0.2150
Equity share acquired by investors	0.1960	0.1910
Number of investors participating in the deal	0.1310	0.3870

Legend: NACE industries of business ideas: 1 = Technology & Software (NACE J, M - partially); 2 = Physical Products & Industrial Innovation (NACE C, T - partially); 3 = Services, Consulting & Creative Industries (NACE M, R, S - partially); 4 = Commerce, Marketplaces & Distribution (NACE G).

The overall proportion of female team members is also positively related to success ( $r = 0.197$ ), although the relationship is not statistically significant ( $p = 0.190$ ). This suggests that the presence of women in the team may matter more than their proportional representation, although this finding should be interpreted cautiously due to the small sample size. The number of all participants in the pitch shows a positive but statistically insignificant correlation ( $r = 0.227$ ,  $p = 0.130$ ), indicating a weak tendency for larger teams to perform better. The expertise of the team is positively associated with success ( $r = 0.278$ ) and approaches conventional significance levels ( $p = 0.061$ ). This provides tentative evidence that higher perceived competence may contribute to improved long-term outcomes.

From the business idea variables, maturity (readiness) exhibits the strongest correlation with success ( $r = 0.465$ ,  $p = 0.001$ ). This relationship is statistically significant at the 1% level, indicating that ventures that are closer to market readiness at the time of the pitch are substantially more likely to succeed in the long term. The marketing orientation of the pitch shows a positive but marginally in-

significant association ( $r = 0.251$ ,  $p = 0.092$ ), suggesting a potential role of marketability in venture performance. The scalability of the idea is also positively correlated with success ( $r = 0.193$ ), but the relationship is not statistically significant ( $p = 0.198$ ). This may reflect limited variation in scalability or insufficient statistical power.

The requested investment amount is negatively correlated with success ( $r = -0.324$ ,  $p = 0.028$ ), and this relationship is statistically significant at the 5% level. This finding suggests that ventures seeking larger amounts of funding tend to perform worse in the long term, potentially reflecting higher risk profiles or overambitious business models. Other financial variables do not exhibit statistically significant relationships with success. The equity offered to investors is negatively correlated ( $r = -0.186$ ), while the equity acquired by investors ( $r = 0.196$ ) and the number of investors participating in the deal ( $r = 0.131$ ) show weak positive associations. However, none of these relationships reach statistical significance, indicating that deal structure variables alone are not strong predictors of long-term success in this sample.

The final regression model was selected using a backward stepwise procedure, resulting in a parsimonious specification including four explanatory variables: (1) number of female participants, (2) proportion of female team members, (3) business idea maturity (readiness), and (4) requested investment amount. **Table 3** presents the Pearson correlations among these variables and the dependent variable. The correlations among the explanatory variables provide important insights into potential multicollinearity issues. Most notably, the number of female participants and the proportion of female team members are highly correlated ( $r = 0.748$ ,  $p < 0.001$ ). This strong association is expected, as both variables capture closely related aspects of team gender composition. However, such a high correlation may

**Table 3.** Pearson correlation between the model variables.

Variable	Correlations:				
	Success measure	Number of female participants	Proportion of female team members	Business idea maturity (readiness)	Requested investment amount
Success measure	1.000	0.337	0.197	0.465	-0.324
<i>P-value</i>		0.022	0.190	0.001	0.028
Number of female participants	0.337	1.000	0.748	0.142	-0.243
<i>P-value</i>	0.022		<0.001	0.346	0.104
Proportion of female team members	0.197	0.748	1.000	0.173	-0.316
<i>P-value</i>	0.190	<0.001		0.250	0.032
Business idea maturity (readiness)	0.465	0.142	0.173	1.000	-0.206
<i>P-value</i>	0.001	0.346	0.250		0.169
Requested investment amount	-0.324	-0.243	-0.316	-0.206	1.000
<i>P-value</i>	0.028	0.104	0.032	0.169	

introduce multicollinearity, potentially inflating standard errors and complicating the interpretation of regression coefficients.

However, other correlations among independent variables are relatively modest and statistically insignificant. For example, business idea maturity shows weak correlations with both gender-related variables ( $r = 0.142$  and  $0.173$ ), suggesting that these factors capture distinct dimensions of venture characteristics. The requested investment amount is moderately negatively correlated with the proportion of female team members ( $r = -0.316$ ,  $p = 0.032$ ), indicating that teams with higher female representation tend to request smaller investments. However, its correlations with other variables are relatively weak and not statistically significant.

### 4.3. Regression Models

**Table 4** presents the results of two regression specifications examining the determinants of long-term success: a linear model (Panel 1) and a logarithmic-linear model (Panel 2). In addition to the linear regression model, a logarithmic-linear specification was employed, as the logarithmic transformation renders the variable distributions more closely approximating normality and reduces their dispersion. Both models are statistically significant at conventional levels. The linear

**Table 4.** Regression models of success.

Panel 1. Linear regression model							
Variables	B	Std. Error	Beta	t-test	p-value	Collinearity Statistics	
						Tolerance	VIF
Constant	0.610	0.570		1.069	0.291		
Number of female participants	0.493	0.226	0.415	2.183	0.035	0.440	2.271
Proportion of female team members	-0.006	0.005	-0.253	-1.298	0.202	0.419	2.385
Requested investment amount	-0.002	0.001	-0.220	-1.631	0.111	0.876	1.141
Business idea maturity (readiness)	0.625	0.200	0.404	3.116	0.003	0.944	1.059
Legend: $R^2 = 0.349$ ; F-test = 5.489 (p-value = 0.01).							
Panel 2. Logarithmic-linear regression model							
Logarithmic variables	B	Std. Error	Beta	t-test	p-value	Collinearity Statistics	
						Tolerance	VIF
Constant	0.668	0.407		1.642	0.108		
Number of female participants	0.492	0.335	0.436	1.470	0.149	0.165	6.051
Proportion of female team members	-0.071	0.071	-0.301	-1.006	0.320	0.163	6.146
Requested investment amount	-0.153	0.077	-0.261	-1.988	0.053	0.840	1.191
Business idea maturity (readiness)	0.612	0.169	0.450	3.625	<0.001	0.941	1.062
Legend: $R^2 = 0.405$ ; F-test = 6.967 (p-value = 0.001).							

model explains approximately 34.9% of the variation in venture success ( $R^2 = 0.349$ ;  $F = 5.489$ ,  $p = 0.01$ ), whereas the logarithmic-linear specification demonstrates slightly better explanatory power ( $R^2 = 0.405$ ;  $F = 6.967$ ,  $p = 0.001$ ). This suggests that the log transformation improves model fit and captures nonlinear relationships more effectively.

In both model specifications, business idea maturity (readiness) emerges as the most robust and statistically significant predictor of success. In the linear model, the coefficient is positive and highly significant ( $B = 0.625$ ,  $p = 0.003$ ), and this effect becomes even stronger in the logarithmic-linear model ( $B = 0.612$ ,  $p < 0.001$ ). This indicates that ventures with more developed and market-ready ideas are significantly more likely to succeed over a ten-year horizon. The number of female participants shows a positive and statistically significant effect in the linear model ( $B = 0.493$ ,  $p = 0.035$ ), suggesting that teams with more female members tend to perform better. However, this relationship loses statistical significance in the logarithmic-linear model ( $p = 0.149$ ), indicating that the result may not be robust across model specifications.

In contrast, the proportion of female team members is negatively associated with success in both models, although the effect is not statistically significant ( $p = 0.202$  and  $p = 0.320$ , respectively). This finding suggests no clear evidence that the relative share of female participants, as opposed to their absolute number, influences outcomes. However, the role the proportion of female participants in the linear regression model is that it makes able to analyze the conditional effects of the composition of the team on success. The mutual effect  $E$  of the number of female participants and the proportion of female participants can be presented as follows:

$$E = aF + b100 \frac{F}{F+M} = \frac{aF^2 + aFM + b100F}{F+M} \quad (1)$$

where  $a$  and  $b$  are the regression coefficients of the number and share of female participants, respectively,  $F$  is the number of female participants, and  $M$  is the number of male participants.

Equation (1) illustrates the joint effect of the two independent variables on success, conditional on the number of female and male participants. The effect of female participants ( $F$ ) is non-linear, following a second-order (quadratic) functional form. **Table 5** presents the conditional effects on success based on the estimated regression coefficients, where  $a = 0.4930$  and  $b = -0.006$ . The results indicate that the non-linear contribution of female participants to success increases markedly as the number of female participants rises, largely irrespective of the number of male participants. While the effect also increases with the number of male participants  $M$ , this relationship is considerably weaker. If the team only consists of one female participant (*i.e.*,  $F = 1$  and  $M = 0$ ), the conditional effect on success is negative. The highest conditional impact is observed when both  $F = 4$  and  $M = 4$ , indicating the presence of increasing returns to team size under balanced gender composition.

**Table 5.** The conditional mutual effect of the number of female participants and the proportion of female participants on success.

	$F = 0$	$F = 1$	$F = 2$	$F = 3$	$F = 4$
$M = 0$	0.0000	-0.1070	0.3860	0.8790	1.3720
$M = 1$	0.0000	0.1930	0.5860	1.0290	1.4920
$M = 2$	0.0000	0.2930	0.6860	1.1190	1.5720
$M = 3$	0.0000	0.3430	0.7460	1.1790	1.6291
$M = 4$	0.0000	0.3730	0.7860	1.2219	1.6720

Legend:  $F$  = Number of female participants in team;  $M$  = Number of male participants in team.

The requested investment amount exhibits a consistently negative coefficient in both models, implying that ventures seeking larger investments may have lower long-term success probabilities. While this effect is not statistically significant in the linear model ( $p = 0.111$ ), it approaches significance in the logarithmic-linear specification ( $B = -0.153$ ,  $p = 0.053$ ), suggesting a potential inverse relationship worth further investigation. Collinearity statistics indicate that in the logarithmic-linear model variance inflation factors (VIFs) for the gender-related variables exceed 6, which may inflate standard errors and partly explain the lack of statistical significance in Panel 2. In contrast, other variables show acceptable VIF levels, indicating that multicollinearity is not a pervasive issue across the model.

**Table 6** evaluates the predictive accuracy and reliability of the linear and logarithmic-linear regression models across different levels of the dependent variable, namely venture success (classes 1 - 5). The comparison is based on the mean and median predicted values within each observed success category, as well as on the linearized transformation of the logarithmic model predictions. Both models demonstrate strong overall statistical significance in distinguishing between success classes, as indicated by the F-tests (linear model:  $F = 8.285$ ,  $p < 0.001$  and logarithmic-linear model:  $F = 7.938$ ,  $p < 0.001$ ). This confirms that the predicted values differ systematically across success categories and that both models capture meaningful variation in venture outcomes. However, differences emerge when examining the accuracy and calibration of predictions across classes.

The linear model produces predicted values that increase with higher success classes, but the progression is relatively compressed. For example, the mean predicted value rises from 1.57 (class 1) to 3.31 (class 5), while intermediate classes (2 - 4) are clustered within a narrow range (approximately 2.22 - 2.46). Notably, the model struggles to clearly distinguish between classes 2 and 3, where the predicted means are nearly identical (2.29 vs. 2.22). This suggests limited discriminatory power in the mid-range of the outcome variable. The logarithmic-linear model, when examined in its original (log-scale) form, produces monotonically increasing predictions across success classes.

**Table 6.** Statistics of the predictions given by the regression models.

Success class		Predicted values:		
		Linear model	Logarithmic-linear model	Linearized value
1	Mean	1.5666	0.3370	1.4008
	Median	1.4150	0.3197	1.3767
	N	16	16	
2	Mean	2.2867	0.6945	2.0028
	Median	2.2943	0.7395	2.0948
	N	18	18	
3	Mean	2.2224	0.7411	2.0982
	Median	2.2972	0.7493	2.1155
	N	6	6	
4	Mean	2.4574	0.8143	2.2577
	Median	2.4266	0.8279	2.2884
	N	4	4	
5	Mean	3.3050	1.1173	3.0567
	Median	3.3050	1.1173	3.0567
	N	2	2	
Total	Mean	2.0870	0.6051	1.8313
	Median	2.2688	0.6815	1.9768
	N	46	46	

Legend:  $F = 8.285$   $p$ -value  $< 0.001$  (linear model);  $F = 7.938$   $p$ -value  $< 0.001$  (logarithmic-linear model). For success classes see [Table 1](#).

Linearization of predicted values makes them align more closely with the observed scale, ranging from 1.40 (class 1) to 3.06 (class 5). Compared to the linear model, the logarithmic specification yields a more consistent and theoretically plausible ordering of predicted values across categories. Importantly, the linearized predictions of the logarithmic model show smoother progression between adjacent classes, particularly between classes 2, 3, and 4. This indicates improved sensitivity to incremental differences in success levels and suggests that the logarithmic transformation helps capture nonlinear relationships in the data.

Appendix 2 and [Table 7](#) provide a detailed decomposition of the explained variance ( $R^2$ ) in venture success across all possible sub-models, as well as the corresponding communalities for both the linear and logarithmic-linear specifications. This approach allows for a deeper understanding of the individual, joint, and higher-order contributions of the four explanatory variables. The total explained variance corresponds to the full model (C1234), which is identical to the  $R^2$  values reported earlier: 0.349 for the linear model and 0.404 for the logarithmic-linear model. This confirms that the logarithmic specification consistently achieves

higher explanatory power, reinforcing earlier findings regarding its superior fit. This suggests that the relationships between the predictors and success are not purely linear. The  $R^2$  values in general indicate a moderate level of explanatory power, which is typical for behavioral and entrepreneurial phenomena.

**Table 7.** Communalities of the regression models of success.

Component	Linear Model	Logarithmic-linear model
U1	0.07572	0.03116
U2	0.02676	0.01450
U3	0.04225	0.05740
U4	0.15425	0.18973
C12	-0.03199	-0.04357
C13	-0.04254	-0.05710
C14	-0.03861	-0.03098
C23	-0.02887	-0.04369
C24	-0.02479	-0.02043
C34	-0.05061	-0.08106
C123	0.04106	0.05414
C124	0.03381	0.01885
C134	0.01966	0.02522
C234	0.01765	0.01918
C1234	0.15500	0.27025
Sum of components	0.34876	0.40360

From the individual components (U1-U4), business idea readiness (X4) clearly emerges as the most influential predictor in both models. Its unique contribution is the largest (0.154 in the linear model and 0.190 in the logarithmic-linear model), substantially exceeding those of the other variables. This suggests that long-term success judgments of investors are fundamentally grounded in execution capability rather than presentation or team composition factors. The remaining variables (number of female participants (X1), proportion of female team members (X2), and requested investment amount (X3)) exhibit relatively modest standalone contributions. The effect of X1 weakens significantly in the log-linear model. Notably, X2 has the weakest individual explanatory power in both models, suggesting that it contributes little independently to explaining success. However, this variable is useful when adjusting the effect of X1, since both X1 and X2 reflect the role of female participants in the pitch. In fact, X1 and X2 together make the effect of female participants non-linear. X3 plays a stronger role in the logarithmic-linear model suggests diminishing or accelerating returns.

The pairwise communalities ( $C_{ij}$ ) are all negative indicating suppression or redundancy effects, where overlapping explanatory power among variables reduces

their combined contribution when included simultaneously. These negative effects are more pronounced in the logarithmic-linear model, implying that while this specification captures more variance overall, it also introduces greater complexity and interdependence among predictors. The strongest negative effect is got in combination of X3 with X4 ( $-0.051$  in the linear model and  $-0.081$  in the logarithmic-linear model). This means that X3 and X4 partly capture the same underlying construct. Similarly, a strong negative effect is obtained in combination of X1 and X3 ( $-0.043$  in the linear model and  $-0.057$  in the logarithmic model) revealing the suppressive effect of X3.

The third-order effects (Cijk) are positive and reveal that interactions between variables play a meaningful role, particularly in the logarithmic-linear model. For instance, the combination of X1 with X2 and X3 (C123) produces relatively high contribution in both models. This means that when three variables are combined, they begin to complement rather than suppress each other. In the logarithmic-linear model, third-order effects are consistently larger (C124 excluded), indicating stronger interdependencies between variables when nonlinearities are accounted for. This suggests that venture success is not solely driven by isolated factors, but rather by combinations of characteristics, especially those involving business idea maturity X4.

The results in Appendix 2 further reinforce these findings, since models including X4 consistently achieve the highest  $R^2$  values across all combinations. The best-performing two-variable model is X3X4 ( $R^2 = 0.270$  in the linear model and  $0.364$  in the logarithmic-linear model), highlighting the joint importance of investment-related and business idea maturity factors. Similarly, model X1X4 shows a high value of  $R^2$  reflecting the strong effect of X4. In the logarithmic-linear model, the incremental gains from adding variables are somewhat larger, again reflecting its improved ability to capture nonlinear and interaction effects.

## 5. Summary of the Study

The findings of this study indicate that entrepreneurial success in the Dragons' Den context is inherently multidimensional and nonlinear. Among the examined predictors, business idea maturity (readiness) emerges as the most consistent and economically meaningful determinant of long-term success. Its effect is not only strong in isolation but is further reinforced through interactions with team composition and financial characteristics, highlighting the configurational nature of entrepreneurial outcomes.

The comparison between model specifications demonstrates that the logarithmic-linear model outperforms the standard linear model in terms of explanatory power and sensitivity to variation in success levels. This suggests that nonlinear transformations are better suited to capturing the underlying structure of the data. At the same time, the presence of negative higher-order communalities points to overlapping explanatory mechanisms and potential suppression effects, emphasizing the need for careful model specification when dealing with correlated pre-

dictors. The analysis of sub-models further confirms that parsimonious model structures can capture a substantial share of the explained variance, particularly when business idea readiness is included. However, interaction effects remain important, indicating that success is shaped by combinations of factors rather than single variables.

Several methodological implications arise from the data characteristics. First, many explanatory variables exhibit skewness and kurtosis, particularly those related to financial aspects, suggesting potential violations of standard regression assumptions and supporting the use of transformations or robust estimation techniques. Second, the relatively small sample size ( $N = 46$ ) necessitates model parsimony to avoid overfitting. It also limits the generalization of the findings. Third, the dependent variable is unevenly distributed, with a concentration in lower success categories, which may limit the suitability of ordinary least squares and point toward alternative modeling approaches such as ordinal regression. Finally, selection effects related to investment variables may introduce bias, as not all ventures receive funding.

With regard to specific predictors, gender-related variables show mixed and partly non-robust effects. While the number of female participants is positively associated with success in some specifications, this relationship is not consistent across models, and the proportion of female participants does not exhibit a statistically significant independent (unique) effect. In fact, this proportion variable in the linear model makes the mutual effect of the number and proportion of female participants non-linear (second-order parabola) and conditional to the number of female and male participants in the team. This conditional effect indicates that the contribution of female participants in the team is negative if the team is only consisted of one woman. However, the contribution increases rapidly, when the number of female participants grows. In addition, the contribution of women to success increases with the number of male participants. Moreover, the requested investment amount shows a negative association with success, which may reflect underlying risk, overvaluation, or inefficiencies, although this finding requires further empirical validation.

The findings of this study have several important implications for entrepreneurs and early-stage investors. First, when assessing the long-term success potential of a business idea, it is essential to ensure that the venture is market-ready, understood as a continuum reflecting increasing levels of technical, organizational, and market validation. Second, careful attention should be paid to the level of investment required to implement the proposed business concept. The requested investment should be aligned with prevailing benchmarks for comparable projects, as excessively high funding requirements may signal underlying challenges in the feasibility or scalability of the business idea. Third, the composition of the entrepreneurial team warrants consideration. The results suggest that teams composed largely of men may be at a disadvantage, whereas the inclusion of women appears to contribute positively to the prospects of long-term success.

Taken together, the findings indicate that the highest risk is associated with ventures characterized by low levels of market readiness, disproportionately large investment requirements, and exclusively male team composition.

In conclusion, the results emphasize the primacy of venture readiness and development stage over purely demographic or financial characteristics in explaining long-term entrepreneurial success. Future research should incorporate non-linear modeling approaches, interaction effects, and larger datasets to further validate and extend these findings. It is important to increase remarkably the size of the sample to get more generalizable and statistically more significant results. Further research could also expand the set of explanatory variables to include factors such as industry characteristics, pitch quality, prior entrepreneurial experience, and investor-specific attributes. It is also important to pay attention to developing new ways to measure long-term success and the central variable, readiness - maturity of business idea. Finally, comparative analyses across different institutional and media contexts—for example, between formats such as Shark Tank and Dragons' Den—would help assess the generalizability of the observed patterns.

### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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## Appendices

### Appendix 1. Descriptive statistics of the variables.

Variables	Mean	Std. Deviation	Skewness	Kurtosis	Median
Success measure	2.087	1.112	1.038	0.510	2.000
Industry 1 (dummy)	0.196	0.401	1.587	0.539	0.000
Industry 2 (dummy)	0.391	0.493	0.461	-1.871	0.000
industry 3 (dummy)	0.239	0.431	1.265	-0.421	0.000
Industry 4 (dummy)	0.174	0.383	1.779	1.216	0.000
Number of participants in the pitch	1.717	0.981	1.494	2.011	1.000
Number of female participants	0.565	0.935	2.364	6.449	1.000
Proportion of female team members	32.348	44.091	0.784	-1.279	0.000
Expertise of team	3.717	0.584	0.121	-0.468	4.000
Business idea maturity (readiness)	2.565	0.720	-1.360	0.384	3.000
Marketing orientation of idea	2.978	0.802	0.310	-0.669	3.000
Scalability of idea	2.065	0.800	-0.120	-1.416	2.000
Requested investment amount	104.565	129.206	2.677	6.972	57.500
Share of equity offered to panelists	19.559	13.588	0.715	0.344	20.000
Equity share acquired by investors	9.791	16.055	1.484	1.141	0.000
Number of investors participating in the deal	0.674	1.117	1.894	3.922	0.000

Legend: For industries see [Table 2](#).

### Appendix 2. Coefficient of determination for all sub-models.

Model	Sub-models	Linear model	Logarithmic-linear model
		R <sup>2</sup>	R <sup>2</sup>
1	X1	0.11325	0.08752
2	X2	0.03880	0.05295
3	X3	0.10481	0.16362
4	X4	0.21605	0.28187
5	X1X2	0.12005	0.09690
6	X1X3	0.17551	0.19404
7	X1X4	0.29068	0.33841
8	X2X3	0.11474	0.17288
9	X2X4	0.23006	0.31438
10	X3X4	0.27024	0.36443
11	X1X2X3	0.19451	0.21387
12	X1X2X4	0.30651	0.34620
13	X1X3X4	0.32200	0.38909
14	X2X3X4	0.27304	0.37243
15	X1X2X3X4	0.34876	0.40360

Legend: XiXj = Regression model of success with Xi and Xj as independent variables; X1 = Number of female participants; X2 = Proportion of female team members; X3 = Requested investment amount; X4 = Readiness of business idea.